

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P921061

Luminaire Tested: DFN2DIP-TR4F0-080D050US935-RLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921061
REPORT IS A COMBINATION OF REPORTS P901916 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-080D050US935-RLLONL
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

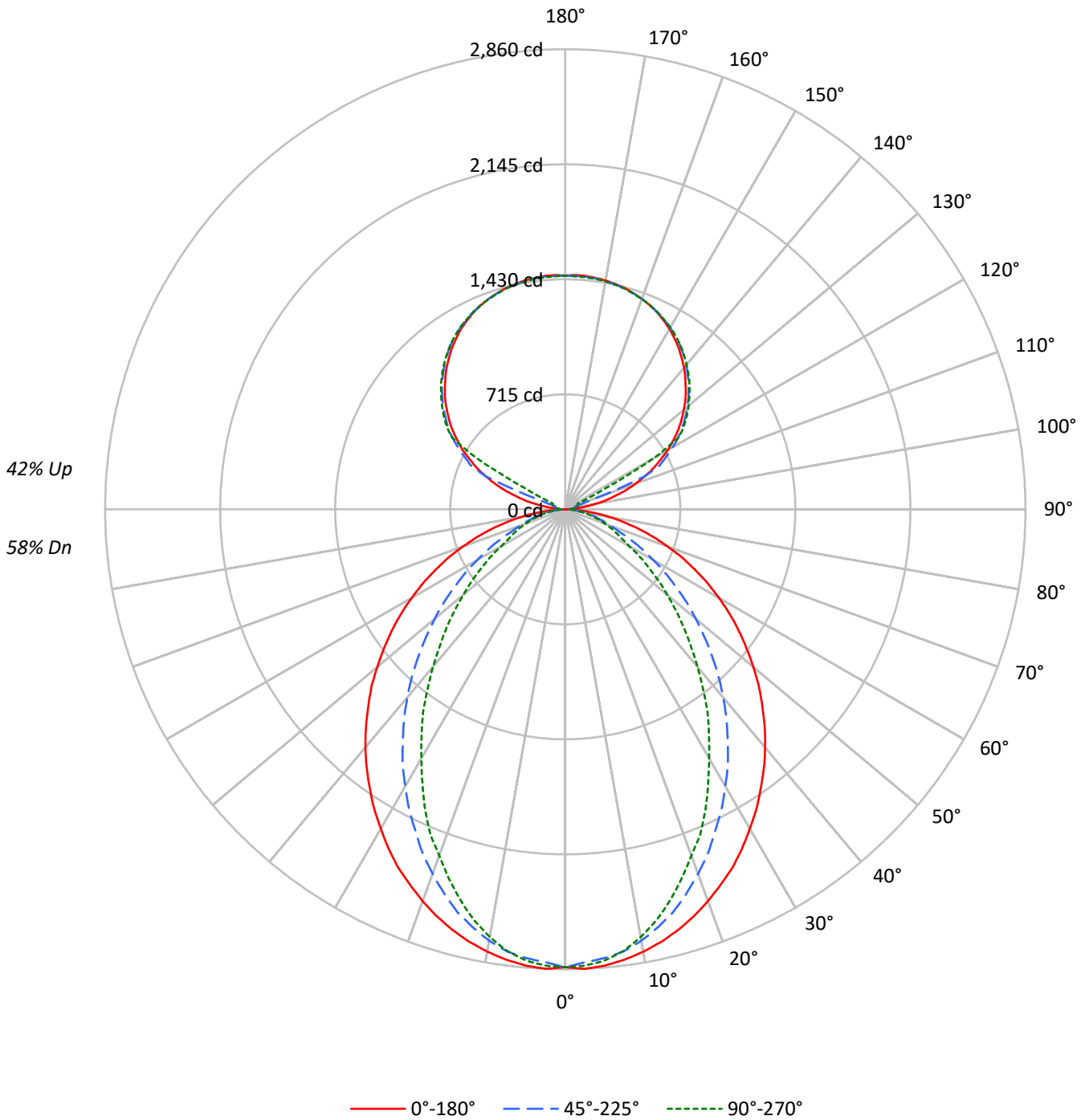
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10116.8 lumens
Efficiency: N/A
Efficacy: 89.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 112.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9957
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | 20 | | | | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | 10 | | | | 0 | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 63 | 63 | 63 | 58 | | | 58 |
| 1 | 100 | 96 | 92 | 89 | 93 | 90 | 86 | 83 | 78 | 75 | 73 | 67 | 65 | 64 | 57 | 56 | 55 | 50 | | | 50 |
| 2 | 92 | 84 | 79 | 74 | 85 | 79 | 74 | 69 | 69 | 65 | 62 | 59 | 57 | 54 | 51 | 49 | 47 | 43 | | | 43 |
| 3 | 84 | 75 | 68 | 62 | 78 | 70 | 64 | 59 | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 43 | 41 | 37 | | | 37 |
| 4 | 77 | 67 | 59 | 53 | 72 | 62 | 56 | 50 | 55 | 49 | 45 | 48 | 44 | 40 | 41 | 38 | 35 | 32 | | | 32 |
| 5 | 71 | 60 | 52 | 46 | 66 | 56 | 49 | 44 | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 | 28 | | | 28 |
| 6 | 66 | 54 | 46 | 40 | 61 | 51 | 43 | 38 | 45 | 39 | 35 | 39 | 35 | 31 | 34 | 31 | 28 | 25 | | | 25 |
| 7 | 61 | 49 | 41 | 35 | 57 | 46 | 39 | 34 | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 28 | 25 | 22 | | | 22 |
| 8 | 57 | 44 | 37 | 32 | 53 | 42 | 35 | 30 | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 23 | 20 | | | 20 |
| 9 | 53 | 41 | 33 | 28 | 49 | 39 | 32 | 27 | 34 | 29 | 25 | 30 | 26 | 23 | 27 | 23 | 20 | 18 | | | 18 |
| 10 | 49 | 38 | 30 | 26 | 46 | 36 | 29 | 25 | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 | 17 | | | 17 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2262 | 2262 | 2262 |
| 5° | 2265 | 2226 | 2240 |
| 10° | 2243 | 2182 | 2167 |
| 15° | 2212 | 2110 | 2054 |
| 20° | 2171 | 2010 | 1916 |
| 25° | 2129 | 1899 | 1782 |
| 30° | 2073 | 1785 | 1613 |
| 35° | 2018 | 1662 | 1464 |
| 40° | 1962 | 1535 | 1293 |
| 45° | 1897 | 1394 | 1139 |
| 50° | 1830 | 1251 | 988 |
| 55° | 1760 | 1099 | 843 |
| 60° | 1678 | 940 | 694 |
| 65° | 1585 | 778 | 624 |
| 70° | 1472 | 628 | 565 |
| 75° | 1329 | 553 | 514 |
| 80° | 1123 | 464 | 445 |
| 85° | 783 | 309 | 334 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1897 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 266.8 | 2.6 |
| 10°-20° | 732.4 | 7.2 |
| 20°-30° | 1028.3 | 10.2 |
| 30°-40° | 1120.9 | 11.1 |
| 40°-50° | 1030.3 | 10.2 |
| 50°-60° | 809.1 | 8.0 |
| 60°-70° | 526.6 | 5.2 |
| 70°-80° | 271.1 | 2.7 |
| 80°-90° | 71.8 | 0.7 |
| 90°-100° | 47.9 | 0.5 |
| 100°-110° | 178.6 | 1.8 |
| 110°-120° | 473.7 | 4.7 |
| 120°-130° | 785.6 | 7.8 |
| 130°-140° | 834.5 | 8.2 |
| 140°-150° | 775.6 | 7.7 |
| 150°-160° | 623.5 | 6.2 |
| 160°-170° | 401.8 | 4.0 |
| 170°-180° | 138.3 | 1.4 |
| 0°-30° | 2027.6 | 20.0 |
| 0°-40° | 3148.5 | 31.1 |
| 0°-60° | 4987.8 | 49.3 |
| 0°-90° | 5857.4 | 57.9 |
| 90°-120° | 700.2 | 6.9 |
| 90°-150° | 3095.8 | 30.6 |
| 90°-180° | 4259.0 | 42.1 |
| 0°-180° | 10116.8 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 2847 | 2847 | 2847 | 2847 | 2847 | |
| 5° | 2847 | 2834 | 2800 | 2824 | 2816 | 270 |
| 15° | 2708 | 2679 | 2592 | 2543 | 2517 | 763 |
| 25° | 2458 | 2375 | 2205 | 2100 | 2061 | 1130 |
| 35° | 2118 | 1986 | 1760 | 1597 | 1540 | 1326 |
| 45° | 1731 | 1559 | 1288 | 1105 | 1043 | 1337 |
| 55° | 1316 | 1116 | 837 | 683 | 634 | 1176 |
| 65° | 889 | 680 | 448 | 361 | 353 | 881 |
| 75° | 474 | 294 | 206 | 188 | 186 | 501 |
| 85° | 111 | 57 | 49 | 49 | 49 | 127 |
| 90° | 1 | 13 | 21 | 26 | 28 | 10 |
| 95° | 68 | 34 | 41 | 46 | 45 | 81 |
| 105° | 320 | 351 | 64 | 76 | 80 | 342 |
| 115° | 604 | 622 | 649 | 162 | 86 | 595 |
| 125° | 855 | 868 | 888 | 896 | 899 | 762 |
| 135° | 1058 | 1074 | 1084 | 1094 | 1092 | 817 |
| 145° | 1227 | 1226 | 1244 | 1251 | 1246 | 767 |
| 155° | 1351 | 1342 | 1354 | 1360 | 1352 | 622 |
| 165° | 1423 | 1417 | 1420 | 1428 | 1420 | 402 |
| 175° | 1456 | 1449 | 1451 | 1458 | 1448 | 139 |
| 180° | 1453 | 1453 | 1453 | 1453 | 1453 | |



TEST NUMBER: P921061

CATALOG NUMBER: DFN2DIP-TR4F0-080D050US935-RLLONL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 2846.8 | 2846.8 | 2846.8 | 2846.8 | 2846.8 |
| 2.5° | 2859.6 | 2846.8 | 2818.4 | 2844.3 | 2839.1 |
| 5° | 2846.8 | 2834.0 | 2800.3 | 2823.6 | 2815.9 |
| 7.5° | 2823.6 | 2808.2 | 2772.2 | 2782.3 | 2769.4 |
| 10° | 2792.6 | 2774.7 | 2723.3 | 2715.3 | 2700.0 |
| 12.5° | 2754.2 | 2730.9 | 2661.2 | 2645.8 | 2617.4 |
| 15° | 2707.7 | 2679.3 | 2591.8 | 2542.9 | 2517.1 |
| 17.5° | 2653.5 | 2612.3 | 2504.0 | 2447.5 | 2406.1 |
| 20° | 2591.8 | 2540.1 | 2411.4 | 2347.2 | 2290.3 |
| 22.5° | 2524.8 | 2465.5 | 2316.0 | 2228.5 | 2189.9 |
| 25° | 2457.8 | 2375.3 | 2205.3 | 2099.8 | 2061.0 |
| 27.5° | 2378.0 | 2290.3 | 2102.2 | 1981.2 | 1921.8 |
| 30° | 2293.0 | 2194.9 | 1988.8 | 1857.6 | 1787.9 |
| 32.5° | 2210.4 | 2091.9 | 1880.8 | 1726.1 | 1661.6 |
| 35° | 2117.8 | 1986.3 | 1759.7 | 1597.4 | 1540.5 |
| 37.5° | 2027.6 | 1885.8 | 1646.3 | 1468.3 | 1404.1 |
| 40° | 1932.3 | 1777.8 | 1527.7 | 1344.8 | 1277.8 |
| 42.5° | 1834.4 | 1669.6 | 1409.3 | 1218.6 | 1154.3 |
| 45° | 1731.3 | 1558.6 | 1288.2 | 1105.1 | 1043.4 |
| 47.5° | 1633.5 | 1450.6 | 1172.3 | 989.2 | 932.6 |
| 50° | 1525.2 | 1342.4 | 1058.9 | 881.0 | 827.1 |
| 52.5° | 1419.4 | 1226.1 | 950.6 | 780.7 | 731.8 |
| 55° | 1316.4 | 1115.5 | 837.2 | 682.8 | 633.9 |
| 57.5° | 1210.9 | 1004.8 | 736.9 | 592.6 | 551.3 |
| 60° | 1102.6 | 896.6 | 631.1 | 499.9 | 458.7 |
| 62.5° | 997.1 | 791.0 | 541.0 | 417.4 | 396.9 |
| 65° | 888.9 | 680.0 | 448.2 | 360.8 | 352.8 |
| 67.5° | 785.8 | 577.0 | 360.8 | 316.8 | 309.2 |
| 70° | 677.6 | 476.7 | 298.8 | 273.0 | 262.7 |
| 72.5° | 574.5 | 383.7 | 249.9 | 229.4 | 224.1 |
| 75° | 474.0 | 293.6 | 206.1 | 188.0 | 185.6 |
| 77.5° | 373.7 | 208.5 | 162.4 | 152.0 | 146.8 |
| 80° | 280.7 | 149.6 | 123.6 | 113.4 | 113.4 |
| 82.5° | 195.7 | 100.6 | 85.0 | 79.8 | 79.8 |
| 85° | 110.7 | 56.6 | 48.9 | 48.9 | 48.9 |
| 87.5° | 41.2 | 20.5 | 20.5 | 18.1 | 18.1 |
| 90° | 1.0 | 12.6 | 21.0 | 26.3 | 28.3 |
| 92.5° | 26.3 | 22.1 | 25.2 | 27.4 | 28.3 |
| 95° | 68.3 | 33.6 | 41.0 | 46.3 | 45.2 |
| 97.5° | 123.0 | 36.9 | 53.6 | 56.8 | 57.8 |
| 100° | 186.1 | 42.1 | 59.9 | 68.3 | 70.4 |
| 102.5° | 255.5 | 253.4 | 62.1 | 73.5 | 76.8 |
| 105° | 319.6 | 351.2 | 64.1 | 75.7 | 79.9 |
| 107.5° | 394.3 | 420.4 | 66.3 | 77.7 | 82.1 |
| 110° | 465.8 | 487.8 | 184.0 | 78.9 | 83.0 |



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CATALOG NUMBER: DFN2DIP-TR4F0-080D050US935-RLLONL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 533.0 | 551.9 | 534.1 | 80.9 | 84.1 |
| 115° | 604.5 | 622.3 | 648.7 | 162.0 | 86.3 |
| 117.5° | 666.5 | 687.5 | 705.5 | 555.0 | 279.7 |
| 120° | 735.9 | 751.7 | 770.6 | 783.2 | 641.3 |
| 122.5° | 794.7 | 811.6 | 832.7 | 839.0 | 840.1 |
| 125° | 854.6 | 868.4 | 888.4 | 895.7 | 898.9 |
| 127.5° | 909.3 | 924.0 | 940.0 | 950.4 | 951.4 |
| 130° | 960.9 | 977.7 | 989.2 | 1000.8 | 999.9 |
| 132.5° | 1013.5 | 1027.2 | 1038.6 | 1048.2 | 1047.1 |
| 135° | 1057.6 | 1074.5 | 1083.8 | 1094.5 | 1092.3 |
| 137.5° | 1103.8 | 1116.5 | 1127.0 | 1137.6 | 1134.5 |
| 140° | 1149.0 | 1157.5 | 1169.0 | 1178.4 | 1173.3 |
| 142.5° | 1187.0 | 1194.4 | 1208.0 | 1216.3 | 1211.1 |
| 145° | 1226.9 | 1225.8 | 1243.6 | 1251.0 | 1245.8 |
| 147.5° | 1261.5 | 1258.3 | 1276.3 | 1281.5 | 1277.4 |
| 150° | 1295.2 | 1287.9 | 1304.7 | 1311.0 | 1305.7 |
| 152.5° | 1323.5 | 1315.2 | 1330.9 | 1337.3 | 1329.9 |
| 155° | 1350.9 | 1341.5 | 1354.1 | 1360.4 | 1352.0 |
| 157.5° | 1372.9 | 1364.6 | 1374.1 | 1381.5 | 1372.9 |
| 160° | 1392.0 | 1385.6 | 1392.0 | 1398.2 | 1390.9 |
| 162.5° | 1408.7 | 1402.5 | 1407.6 | 1415.0 | 1405.6 |
| 165° | 1423.4 | 1417.2 | 1420.3 | 1427.6 | 1420.3 |
| 167.5° | 1435.0 | 1428.7 | 1431.9 | 1439.2 | 1429.8 |
| 170° | 1444.5 | 1438.1 | 1440.3 | 1447.6 | 1438.1 |
| 172.5° | 1450.8 | 1444.5 | 1446.6 | 1454.0 | 1444.5 |
| 175° | 1456.0 | 1448.6 | 1450.8 | 1458.1 | 1447.6 |
| 177.5° | 1458.1 | 1450.8 | 1451.9 | 1459.2 | 1449.7 |
| 180° | 1452.8 | 1452.8 | 1452.8 | 1452.8 | 1452.8 |



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CIE UGR TABLE:

| Reflectances: | | | | | | | | | | | |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| Wall | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Reference plane | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H | Y=2H | 10.68 | 11.58 | 11.58 | 12.49 | 13.65 | 6.66 | 7.56 | 7.55 | 8.47 | 9.62 |
| | 3H | 12.37 | 13.17 | 13.27 | 14.09 | 15.27 | 7.85 | 8.66 | 8.76 | 9.57 | 10.76 |
| | 4H | 12.98 | 13.74 | 13.90 | 14.66 | 15.85 | 8.31 | 9.07 | 9.23 | 9.99 | 11.18 |
| | 6H | 13.40 | 14.10 | 14.34 | 15.03 | 16.24 | 8.63 | 9.33 | 9.56 | 10.26 | 11.47 |
| | 8H | 13.53 | 14.20 | 14.47 | 15.14 | 16.35 | 8.73 | 9.39 | 9.67 | 10.34 | 11.54 |
| | 12H | 13.60 | 14.23 | 14.54 | 15.17 | 16.40 | 8.77 | 9.40 | 9.72 | 10.34 | 11.57 |
| 4H | 2H | 10.71 | 11.47 | 11.64 | 12.39 | 13.59 | 7.26 | 8.02 | 8.19 | 8.94 | 10.14 |
| | 3H | 12.55 | 13.18 | 13.48 | 14.13 | 15.34 | 8.62 | 9.25 | 9.56 | 10.20 | 11.41 |
| | 4H | 13.24 | 13.82 | 14.19 | 14.76 | 16.00 | 9.17 | 9.74 | 10.12 | 10.69 | 11.93 |
| | 6H | 13.76 | 14.25 | 14.72 | 15.23 | 16.46 | 9.59 | 10.09 | 10.55 | 11.06 | 12.29 |
| | 8H | 13.94 | 14.40 | 14.90 | 15.36 | 16.61 | 9.73 | 10.19 | 10.69 | 11.15 | 12.40 |
| | 12H | 14.03 | 14.45 | 15.01 | 15.43 | 16.68 | 9.79 | 10.21 | 10.77 | 11.19 | 12.44 |
| 8H | 4H | 13.21 | 13.68 | 14.18 | 14.64 | 15.89 | 9.46 | 9.92 | 10.42 | 10.88 | 12.13 |
| | 6H | 13.78 | 14.16 | 14.77 | 15.17 | 16.42 | 9.98 | 10.36 | 10.96 | 11.37 | 12.61 |
| | 8H | 14.00 | 14.34 | 15.00 | 15.33 | 16.59 | 10.17 | 10.51 | 11.17 | 11.50 | 12.76 |
| | 12H | 14.14 | 14.44 | 15.14 | 15.43 | 16.74 | 10.29 | 10.59 | 11.29 | 11.58 | 12.89 |
| 12H | 4H | 13.17 | 13.59 | 14.15 | 14.57 | 15.82 | 9.46 | 9.88 | 10.44 | 10.86 | 12.11 |
| | 6H | 13.76 | 14.10 | 14.75 | 15.09 | 16.35 | 10.03 | 10.36 | 11.02 | 11.36 | 12.62 |
| | 8H | 13.98 | 14.28 | 14.98 | 15.27 | 16.58 | 10.24 | 10.54 | 11.24 | 11.53 | 12.84 |